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Second language as a compensatory resource for maintaining verbal fluency in bilingual immigrants with schizophrenia

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ABSTRACT

Background and objectives. Due to the large migrations over the past three decades, large numbers of individuals with schizophrenia are learning a second language and being seen in clinics in that second language. We conducted within-subject comparisons to clarify the contribution of clinical, linguistic and bilingual features in the first and second languages of bilinguals with schizophrenia.

Methods. Ten bilingual Russian(L1) and Hebrew(L2) proficient patients, who developed clinical schizophrenia after achieving proficiency in both languages, were selected from 60 candidates referred for the study; they were resident in Israel 7–32 years with 3–10 years from immigration to diagnosis. Clinical, linguistic and fluency markers were coded in transcripts of clinical interviews.

Results. There was a trend toward more verbal productivity in the first language (L1) than the second language (L2). Clinical speech markers associated with thought disorder and cognitive impairment (blocking and topic shift) were similar in both languages. Among linguistic markers of schizophrenia, Incomplete syntax and Speech role reference were significantly more frequent in L2 than L1; Lexical repetition and Unclear reference demonstrated a trend in the same direction. For fluency phenomena, Discourse markers were more prevalent in L1 than L2, and Codeswitching was similar across languages, showing that the patients were attuned to the socio-pragmatics of language use.

Conclusions. More frequent linguistic markers of schizophrenia in L2 show more impairment in the syntactic/semantic components of language, reflecting greater thought and cognitive dysfunction. Patients are well able to acquire a second language. Nevertheless, schizophrenia finds expression in that language. Finally, more frequent fluency markers in L1 suggests motivation to maintain fluency, evidenced in particular by codeswitched L2 lexical items, a compensatory resource.

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1. Introduction

Despite widespread indigenous bilingualism and recent large-scale immigration, there is still relatively little research on the interaction of schizophrenia and bilingualism. Bersudsky et al. (2005) examined Russian immigrants to Israel with full symptomatic schizophrenia who acquired Hebrew after immigration, showing that "despite the cognitive compromises … and the manifest atypicalities in language of speakers with schizophrenia, the process of acquiring a second language seems relatively unaffected by schizophrenia" (p. 535).

The primary aim of this paper is to examine clinical, linguistic and bilingual markers of speech in Russian immigrants to Israel who acquired Hebrew and only later developed schizophrenia. We are interested in knowing whether clinical and linguistic aspects of schizophrenia affect the two languages of fluent bilinguals in the same ways. Alternatively, we would like to know how the manifestations of schizophrenia play themselves out in one or both of a bilingual's languages. The long range interest is to be able to distinguish linguistic phenomena in schizophrenia from typically developing bilingualism and second language acquisition, a difficult task given the overlapping nature of the phenomena. By comparing both languages in bilingual patients, linguistic understanding may contribute to the study of neurobiological and cognitive systems underlying second language acquisition and schizophrenia.

The importance of language disturbances in schizophrenia has been recognized from the earliest descriptions of the pathology

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(Bleuler, 1911; Kleist, 1914; Kraepelin, 1919) through to recent association of deficits in neural organization of speech and language (DeLisi, 2001; Marini et al., 2008). Andreasen (1979) was among the first to describe the language of patients with schizophrenia, specifying thought disorder and the following communication difficulties as the salient features: poverty of speech (poverty of thought, laconic speech), poverty of content of speech (poverty of thought, empty speech, alogia, verbigeration), pressure of speech, distractible speech, tangentiality, derailment (loose associations, flight of ideas), incoherence (word salad, schizophasia, paragrammatism), illogicality, clanging, neologisms, word approximations (paraphasia, metonyms), circumstantiality, loss of goal, perseveration, echolalia, blocking, stilted speech and self-reference. Andreasen's specifications appeared in DSM-III (1980). DSM-IV (1994) simplifies the language descriptions to positive symptoms of "the disorganization dimension" – disorganized speech such as frequent derailment (previously topic shifting) and incoherence and negative symptoms of restrictions in fluency (blocking) and productivity of speech (alogia, previously poverty of speech, poverty of content of speech). In DSM-V (2013) language atypicalities are only within the basic criterion A, Disorganized speech (e.g., frequent derailment or incoherence).

In neuropsychology and neurolinguistics, fine-grained linguistic analysis has been applied to a wide spectrum of abnormalities, schizophrenia among them. These analyses have examined structure, functions and content at micro- and macro-levels of linguistic organization (Covington et al., 2005; DeLisi, 2001; Marini et al., 2008). Patients with schizophrenic disorders have been described as presenting with: selective problems (Marvel et al., 2004), word-finding difficulties (McKenna and Oh, 2008), impaired lexical access (Covington et al., 2005), empty content and unclear references forming vague and ambiguous discourse in lexical processing (Marini et al., 2008) and reduced syntactic complexity (Morice and McNicol, 1986).

These investigations, focusing on executive functions and pragmatics/discourse, show impaired language at almost all levels with more pervasive evidence at the macrolevel of executive functions and pragmatics. Patients find it difficult formulating what they want to communicate, retrieving information from declarative memory, and generating an appropriate mental model to express information about goals. As a result, they demonstrate signs of poor fluency, less informativeness, poverty of speech, tangentiality and incoherence (Linscott, 2005). Marini et al. (2008) concluded that the most prominent disturbances involve an inability to use pragmatic rules. Cognitive deficits based on distorted attention (Nuechterlein et al., 2002) have also been documented. Docherty et al. (2006) showed evidence for deficits in action planning, ordering and sequencing. These skills, though, are the basis for building up cohesive and lexical-semantically appropriate context (Kuperberg et al., 2006). Badcock et al. (2011) reported correlations regarding poor fluency for actions in schizophrenia with odd speech, providing "evidence of a specific role of action-based language production deficits in thought disorder together with a joint effect on social interaction skills". Poor verbal fluency in schizophrenia has also been associated with reduction in semantic store (Chen et al., 2000).

In the present study, we identify clinical and linguistic features of schizophrenia in both the first and the second languages, how they related to each other and how they relate to cognitive issues of schizophrenia and bilingualism. We predict that clinical markers of schizophrenia (blocking and topic shift) will cut across the two languages. On the other hand, linguistic markers of schizophrenia (Incomplete syntax, Lexical repetition, Phoric reference and Unclear reference) are expected to be more prevalent in the second language. Finally, bilingual speakers with schizophrenia are predicted to show awareness of the need to maintain fluency through their use of discourse markers and codeswitching.

2. Method

2.1. Participants

Patients were selected from Russian immigrants to Israel diagnosed with schizophrenia and observed in the Beer Sheba Mental Health Center outpatient clinic. Written, voluntary informed consent was obtained, following an explanation of the nature of the study and necessity to record the interviews. The study protocol was approved by the Helsinki Committee (Institutional Review Board) of Soroka Medical Center (Beer-Sheva, Israel).

Sixty patients were examined to identify those who met the following inclusion criteria: 1) diagnosis of schizophrenia as defined by DSM-IV for at least 2 years prior to the study; 2) right-handed native speaker of Russian; 3) second language proficiency (comprehension and expression) in Hebrew acquired after immigration and sufficient for a one hour interview; 4) Positive and Negative Syndrome Scale (PANSS) total score ≥ 60, including scores ≤ 3 on the following positive [P3/Hallucinatory behavior, P7/Hostility] and negative subscale items [N3/Poor rapport]; 5) stable psychiatric condition, i.e. absence of hospitalization for 3 months prior to the study and absence of need to change patient's psychotropic medication regimen at onset of the study; 6) male or female, aged 18–60. Exclusion criteria were: psychiatric comorbidities, concomitant psychiatric treatments, substance abuse, and overt medical or neurological disorders based on a BASIC physical examination. These criteria yielded 10 patients with diagnoses of chronic schizophrenia (DSM-IV), who participated in two interview sessions, one in their native Russian and the other in their second language, Hebrew.

Background information, including age, education and employment, immigration, age of schizophrenia onset and PANSS scores, is summarized in Table 1.

There were 8 males and 2 females, aged 25–59 ($M = 33.8$, s.d. $= 11.0$). Educational level varied; all had completed primary school, only two had higher education. These two were employed in their professions (engineer and teacher); seven held working class jobs, and three were unemployed.

Age at onset of illness ranged from 15–55 years with all but one patient first diagnosed from their mid-teens to mid-twenties. The one exception (patient 14) was diagnosed at age 55. Time from immigration to diagnosis ranged from 2–10 years following immigration ($M = 5.3$, s.d. $= 3.9$). Patient 02 was diagnosed 3 years before immigration.

Length of residence in Israel was 7–32 years ($M = 14.6$, s.d. $= 6.8$). Given age at the time of immigration ($M = 19.0$, s.d. $= 10.4$), range 11–47 years, all patients were classed as late acquiring bilinguals. Thus, second language skills were acquired after the establishment of the first language (Russian) as the dominant language system. Functional bilingualism of the participants is attested to by the fact that all patients were able to discuss a wide spectrum of topics in Hebrew, to function communicatively in everyday life, including school, to maintain a steady job, to communicate with a social worker, and to undergo psychiatric evaluation.

2.2. Data collection

The primary data for the study were collected via sociolinguistic interviews by a single trilingual Russian–English–Hebrew research assistant trained in linguistics and in the interviewing procedure. The interviews aimed at eliciting information about family and social background, immigration experience, and